

REMARKS/ARGUMENTS

Reconsideration and allowance of this application are respectfully requested in view of the following remarks. By this amendment, new claim 24 is added. Previously presented claims 1, 3-8 and 10-23 are pending for further examination.

Claims 12, 15-16, 18, 21 and 23 have been rejected under 35 USC §102(e) as being anticipated by Chen et al. (U.S. Patent No. 6,532,018). Claims 1, 3-8 and 10 have been rejected under 35 USC §103 as being obvious over Chen et al. ('018) in view of Migdal (U.S. Patent No. 6,426,753) and, in addition, dependent claims 11, 13, 14, 17, 19, 20 and 22 have been rejected under 35 USC §103 as being obvious over Chen in view of Migdal '753 and further in view of Nally '604.

For at least the following reasons, Applicant respectfully submits that independent claims 1 and 12 and the dependent claims thereon are not anticipated by or rendered obvious by the cited references. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

The rejection of claims 12, 15-16, 18, 21 and 22 under 35 U. S. C. §102(b) as being anticipated by Chen et al. (U.S. Patent No. 6,532,018) is respectfully traversed.

Independent claim 12 recites a method of transferring data from a graphics chip to a main memory of a graphics system that is provided on a separate chip from said graphics chip (i.e., an external image storage destination), including: storing image data in an embedded frame buffer of the graphics chip; initiating a copy out operation for

transferring data from the embedded frame buffer to the main memory of the graphics system (which is an off-chip external storage destination); converting the data from one format to another format during the copy out operation between the embedded frame buffer and the main memory; and writing the converted data to the main memory of the graphics system (which is provided on a separate chip from the graphics processing chip). Thus, claim 12 as presently presented requires that the copy out operation transfer data from an embedded frame buffer of a graphics chip to a main memory that is provided on a separate chip and that the conversion occur during the copy out operation.

Applicants respectfully contend that this combination of features is not disclosed in the Chen et al. ('018) patent. For example, the 2/10/05 Office Action cites column 4, lines 48-67 and column 5, lines 1-12 as disclosing the feature of using a copy pipeline to transfer the data from an embedded frame buffer to an external memory. However, the cited passages relied upon in the Chen et al. patent only disclose copying data to different locations within the same M chip, rather than from an embedded frame buffer on the graphics processor chip to an external main memory of the graphics system that is provided on a separate chip, as set forth in applicants' claim 12.

With respect to the claim 12 features of converting the data from one format to another during the copy out operation and writing the converted data to the main memory of the graphics system, the Office Action has relied on the Chen et al. patent disclosures at col. 2, lines 43-49 and column 4, lines 48-67 and column 5, lines 1-12. However, any

conversion of data identified in the Chen et al. patent is done by the display chip 16 which, after directing the rasterizer chip 16 to retrieve data from the frame buffer, "provides some formatting of the data from the frame buffer prior to sending it to the monitor 20." (Chen et al. patent at column 2, lines 42-46.) Applicants respectfully contend that Chen et al.'s performing of "some formatting" prior to displaying on a monitor does not fully anticipate or even suggest the process of converting pixel data from one format to another during a copy out operation for writing the pixel data into a main memory provided on a separate chip, as set forth in applicants' claim 12.

Moreover, applicants respectfully contend that Chen et al. teach away from writing converted data to a memory provided on a separate chip, as set forth in applicants' claims, at least because the Chen et al. patent is concerned with reducing latency problems which occur when writing to an external off-chip memory. (See, for example, the Chen et al. patent at column 2, lines 4-6 and lines 53-56, column 4, lines 48-50 and column 5, lines 2-4.) For example, Chen et al. explicitly state that "The data never needs to leave the substrate." (Chen et al. patent at column 4, line 50.)

Chen et al. neither teach nor suggest the copy out features as recited in Applicants' claim 1 in which the copy pipeline converts the data from one format to another format after reading the data from the embedded frame buffer of a graphics co-processor and during transfer of the data to the external main memory. Thus, Applicants respectfully contend that the Chen et al. patent does not anticipate independent claim 12 or any of

claims 15-16, 18, 21 and 22 dependent thereon because it does not disclose every element of the claimed invention. See Lewmar Marine, Inc. v. Barient, Inc., 3 U.S.P.Q. 2d 1766 (Fed. Cir. 1987).

The rejection of claims 1, 3-8 and 10 under 35 U.S.C. §103 as being unpatentable over Chen et al. ('018) in view of Migdal (U.S. Patent No. 6,426,753) and, in addition, dependent claims 11, 13, 14, 17, 19, 20 and 22 as being obvious over Chen et al. ('018) in view of Migdal ('753) and further in view of Nally et al. (U.S. Patent No. 5,506,604), is respectfully traversed.

Independent claim 1 recites a graphics system, including: a main processor; a graphics coprocessor having an embedded frame buffer; a main memory on a separate chip from said graphics coprocessor; a copy pipeline on said graphics coprocessor which transfers data from the embedded frame buffer to said main memory; wherein the copy pipeline converts the data from one format to another format after reading the data from the embedded frame buffer and during transfer of the data from the embedded frame buffer to the main memory. The Chen et al. reference fails to teach or suggest these features for at least the same reasons as set forth above with respect to claim 12. Moreover, Applicants respectfully contend that the Migdal ('753) reference neither teaches nor suggests these claimed features either when considered alone or together with Chen et al. or any other reference of record.

At the outset, applicants respectfully contend that Migdal fails to teach or suggest any type of copy pipeline arrangement per se. Instead, the Migdal ('753) patent is directed toward a distributed frame buffer and texture cache memory arrangement implemented using a high bandwidth network. Applicants contend that there is no teaching or suggestion by either Chen et al. or Migdal of a copy pipeline arrangement for a graphics system in which pixel data is copied from a frame buffer memory instantiated on the same semiconductor chip as a graphics coprocessor to a separate main memory on another chip. In fact, the very nature of Migdal's *distributed* memory arrangement seems to teach away from Applicants' claimed arrangement as is no "main memory" per se and, moreover, there would be need to copy out data to such a separate main memory. When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. See *In re Geiger*, 815 F. 2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987).

In addition, Applicants respectfully contend that there is no teaching or suggestion in Migdal to suggest the obviousness of modifying the system of Chen et al. to implement a copy pipeline per se or to incorporate a main memory on another chip separate from Chen et al.'s combined logic and memory chip, or to provide format conversions upon copying out data to a main memory. Applicants respectfully contend that the Office Action improperly relies on hindsight reconstruction of the claimed invention based on the teachings of the instant application in reaching its obviousness determination. "To

imbue one of ordinary skill in the art with knowledge of the invention, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." See *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1543, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Only in view of the teachings of the instant application could the rejections possibly be maintained.

Likewise, the Nally et al. ('604) patent, although directed toward converting video data from one YUV format to another YUV format, fails to make up for the deficiencies of the Chen et al. and Migdal references as discussed above.

Accordingly, it is submitted that claim 1 and claims 1, 3-8, 10, 11, 13, 14, 17, 19, 20 and 22 dependent thereon are patentably distinct over the combined teachings of Chen et al. ('018) in view of Migdal ('753) and/or further in view of Nally et al. ('604).

Applicants respectfully submit that the new claim 24 presented herein does not raise substantial new issues or require any additional search. Consequently, in view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims patentably distinguish the prior art of record and are in condition for allowance. Thus, withdrawal of the rejections and passage of this case to issuance at an early date are earnestly solicited.

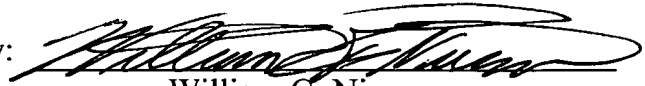
FOULADI et al.
Appl. No. 09/722,663
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Should the Examiner have any questions regarding this response, or deem that any further issues need to be addressed prior to allowance, the Examiner is invited to call the undersigned attorney at the phone number below.

Respectfully submitted,

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